

PATENT ABSTRACTS OF JAPAN

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(30)Priority

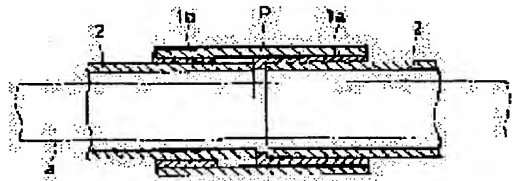
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(54) TERMITE DAMAGE PREVENTING PIPE JOINT FOR UNDERGROUND ELECTRIC LINE AND RUBBER RING WHICH IS USED IN THE JOINT

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent termite damages to cable in an underground electric line.

SOLUTION: In the underground electric line, wherein a pipe 2 is laid under the ground and a cable 2a is inserted in the pipe 2, termite intrusion preventing treatment is applied to a pipe junction part. For the treatment, rubber rings 1a, 1b to which a termite preventing agent of 0.1-0.4 wt.% is added are used. By the presence of the termite preventing agent, termites are hindered from intruding the inside of the pipe 2, and termite damages to the cable (a) are prevented.



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CLAIMS

[Claim(s)]

[Claim 1] The termite vermin damage prevention pipe joint in the underground electric line characterized by performing termite invasion prevention processing to the joint of said duct 2 in the underground electric line which laid the duct 2 in soil and let Cable a pass in the duct 2.

[Claim 2] the rubber rings 1a and 1b which intervene the above-mentioned termite invasion prevention processing between the tube ends of both the tubing 2 in a duct joint — ant-protection — business — the termite vermin damage prevention pipe joint in the underground electric line according to claim 1 characterized by carrying out using what added drugs.

[Claim 3] the above-mentioned ant-protection used for the termite vermin damage prevention pipe joint in an underground electric line according to claim 2 — business — the rubber ring which comes to add drugs.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the rubber ring used for the termite vermin damage prevention pipe joint of that cable and it in underground electric lines, such as a power cable and a telecommunication cable.

[0002]

[Description of the Prior Art] In the termite of conventional our country, the problem of a termite vermin damage of the cable in the underground electric line which did not become a problem has arisen by invasion of the termite from many foreign countries today when international trade is prosperous. as a means to prevent this vermin damage, having thought makes first tubing or the cable jacket which makes a duct ant-protection nature -- it is -- it -- tubing or a cable jacket -- ant-protection -- business -- drugs are applied or it sinks in.

[0003] However, spreading of tubing and the drugs to a jacket becomes large-scale, and it becomes complicated the working it. Moreover, it cannot adopt sinking [of drugs] in as established tubing and an established cable.

[0004] An activity under the above-mentioned actual condition is easy for this invention, and let it be a technical problem to offer the termite vermin damage prevention means which can be adopted also as an established duct.

[0005]

[Means for Solving the Problem] In order to attain the above-mentioned technical problem, this invention decided to perform termite invasion prevention processing to the joint of the duct in an underground electric line.

[0006] In the established underground electric line, when the location where the cable in it has received the termite vermin damage was checked, in tubing, the through tube (ant trail) by vermin damage was not produced, but the rubber ring of a tubing joint was consumed and the ant trail was generated in the rubber ring. For this reason, we decided to perform termite invasion prevention processing to that joint in order to prevent the invasion of a termite to the mediation side of that rubber ring, i.e., the plane of composition of tubing. This processing can be adopted also in an established duct as well as the time of establishment of a duct.

[0007]

[Embodiment of the Invention] the rubber ring which intervenes between the tube ends of both tubing in that duct joint in the underground electric line which laid the duct in soil and let the cable pass in that duct as 1 operation gestalt of this invention -- ant-protection -- business -- it can consider as the configuration which performed the above-mentioned termite invasion prevention processing by using what added drugs.

[0008] although the conventional Hume pipe, a steel pipe, fiberglass-reinforced-plastics tubing, etc. can be used for the above-mentioned tubing -- ant-protection -- business -- that into which drugs were infiltrated is desirable.

[0009] the above-mentioned ant-protection -- business -- the existing various things of a publication can be adopted as drugs at JP,59-17083,B, JP,59-40125,B, JP,5-286816,A, etc.

[0010]

[Example] the rubber rings 1a and 1b of a tubing joint with which one example was shown in drawing 1 and drawing 2, and this example attached the pipe joint P in one tubing 2 -- ant-protection -- business -- what added drugs and carried out kneading shaping is adopted. That is, in the joint of the tubing 2 and 2 in which Cable a is inserted, the rubber rings 1a and 1b which added 0.2% of the weight to the styrene butadiene rubber (SBR), and fabricated anti-ant agent (for example, the Sumitomo Chemical [Co., Ltd.] trade name: EKUSUMIN, common-name permethrin) to it were adopted. At the time of the shaping, the compound of an amount and EKUSUMIN was made suitably, the thing of an ethylene-vinylacetate copolymer (EVA) which mixed the compound to SBR was used, and EKUSUMIN was equally distributed in SBR as it is also at the compatibility of SBR of EVA, and both of EKUSUMIN.

[0011] As shown in drawing 2, the socket side of tubing 2 is equipped with these rubber rings 1a and 1b, and they connect both the tubing 2 and 2 by other tubing's 2 putting and putting opening like an arrow head. In this joint structure, even if put in into the soil of the group of Coptotermes formosanus, invasion of the termite to the inside of tubing 2 and 2 was not accepted.

[0012] Although what is necessary is just to have selected suitably as an addition of the above-mentioned anti-ant agent with extent which does not spoil the function of rubber rings 1a and 1b, in 0.1 - 0.4% of the weight of the addition, the satisfaction ***** thing was obtained in each trial of *****, hardness, aging, and permanent set. The optimal addition was 0.2 % of the weight.

[0013] although the above-mentioned example comes out about the joint of the tubing 2 and 2 of the diameter of congener said, **** can be performed if the same rubber rings 1a and 1b are used also in the thing which is shown in drawing 3 and which formed the stopper 3 of rubber ring 1b and one in the center also in the case of such a pipe

joint P.

[0014] moreover — although cross-section dimensions (outer diameter) differ and the diameter of the same also uses the pipe joint P shown in drawing 4 (a) thru/or (c) in this case, when it is tubing 2 and two comrades from which the outer diameter of different diameter tubing etc. differs, and connecting Pori Cong FRP tubing with tubing of a different kind, such as a steel pipe and FRP tubing, — the same ant-protection also as those rubber rings 1a and 1b — business can be used. Furthermore, it is the same also at the free pipe joint P shown in the flexible joint P which is shown in drawing 5 thru/or drawing 7 , and which is shown in the middle joint P and drawing 8 for size adjustment in the middle of a duct, and drawing 9 . Rubber rings 1a and 1b may really be made into a thing in these cases (drawing 5 thru/or drawing 6).

[0015]

[Effect of the Invention] Since this invention prevented invasion of a termite as mentioned above as a tubing joint is also, it can prevent the termite vermin damage of a cable cheaply and effectively also not only in establishment but in an established underground electric line.

[Translation done.]

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TECHNICAL FIELD

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned technical problem, this invention decided to perform termite invasion prevention processing to the joint of the duct in an underground electric line.

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EXAMPLE

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The sectional view of the tubing joint of one example

[Drawing 2] The sectional view for important section operation explanation of this example

[Drawing 3] The sectional view of the tubing joint of other examples

[Drawing 4] (a), (b), and (c) are the sectional view of each of other example.

[Drawing 5] (a) is the perspective view of the tubing joint of other examples, and (b) is this sectional view.

[Drawing 6] (a) is the perspective view of the tubing joint of other examples, and (b) is this sectional view.

[Drawing 7] (a) is the perspective view of the tubing joint of other examples, and (b) is this sectional view.

[Drawing 8] The sectional view of the tubing joint of other examples

[Drawing 9] The sectional view of the tubing joint of other examples

[Description of Notations]

1a, 1b Rubber ring

2 Tubing

P Pipe joint

Cable

[Translation done.]

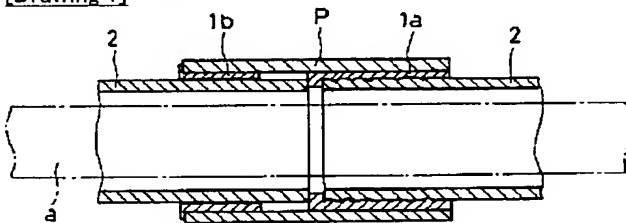
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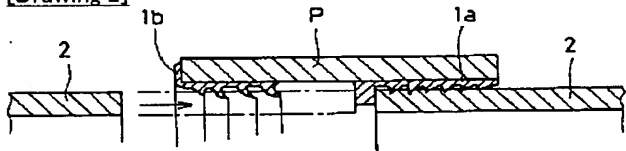
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DRAWINGS

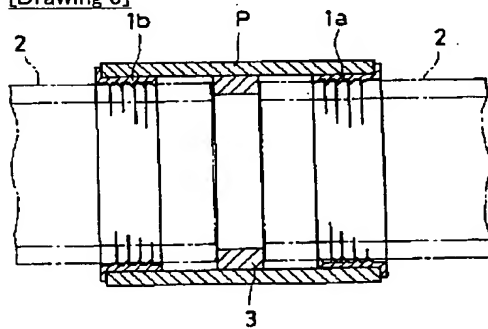
[Drawing 1]



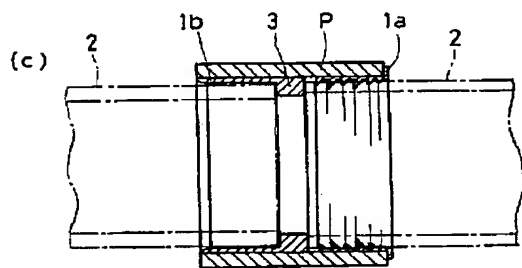
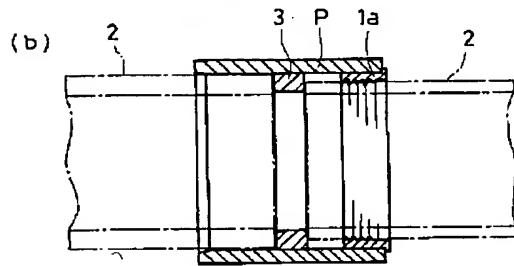
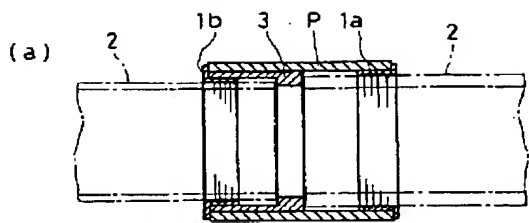
[Drawing 2]



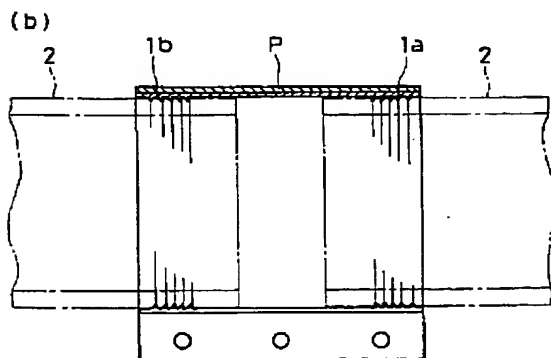
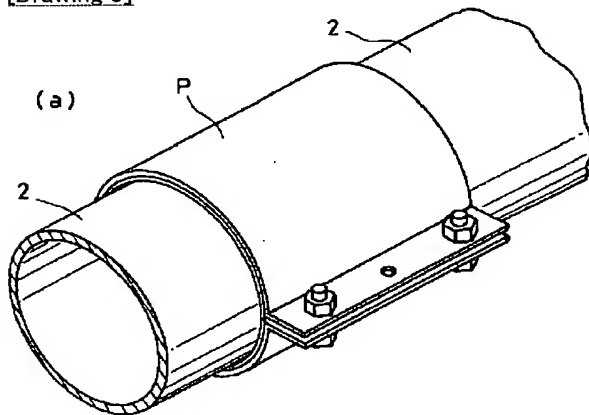
[Drawing 3]



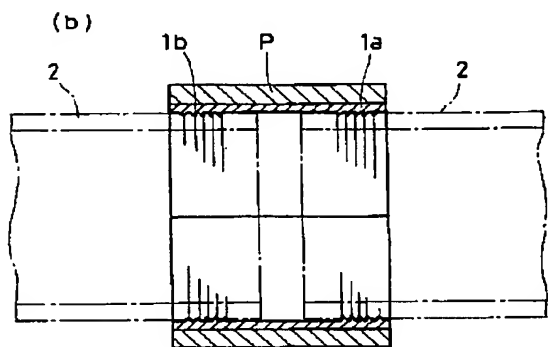
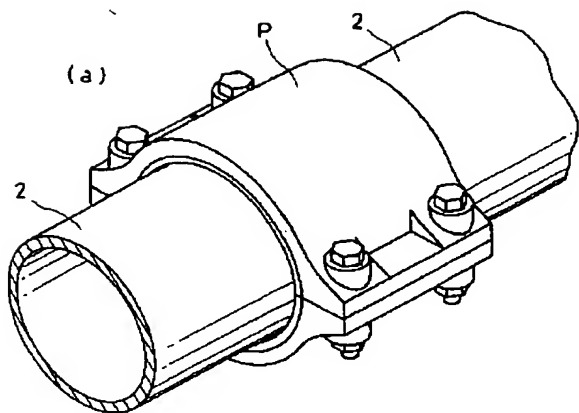
[Drawing 4]



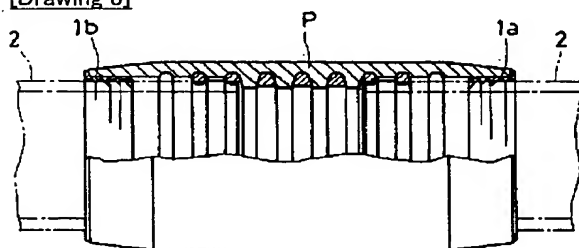
[Drawing 5]



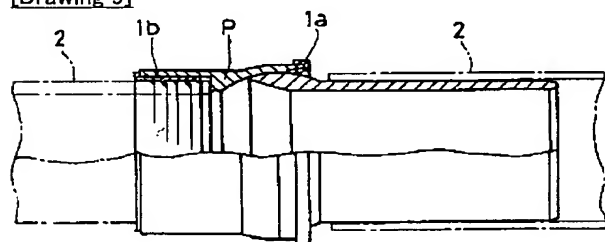
[Drawing 6]



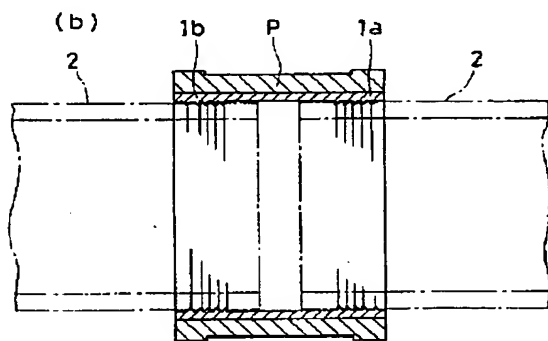
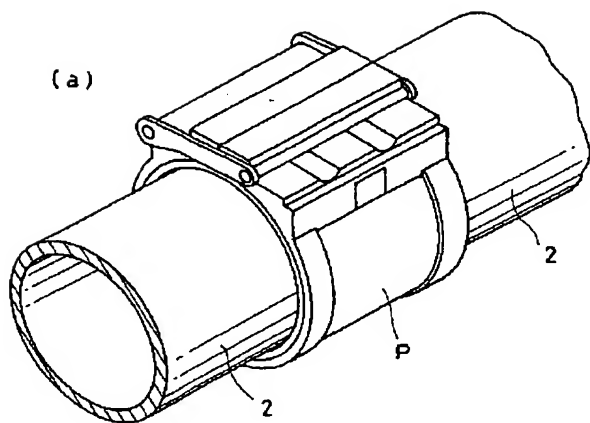
[Drawing 8]



[Drawing 9]



[Drawing 7]



[Translation done.]

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(33) 優先権主張国 日本 (J P)

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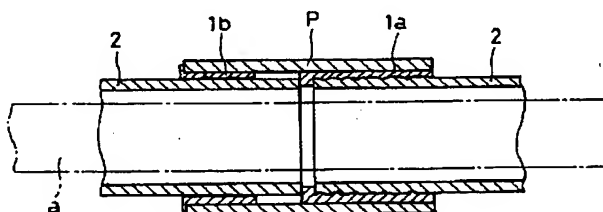
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(54) 【発明の名称】 地中電線路における白蟻食害防止管継手及びそれに使用するゴム輪

(57) 【要約】

【課題】 地中電線路におけるケーブルの白蟻食害を防止する。

【解決手段】 土中に管2を布設し、その管2内にケーブルaを通した地中電線路において、その管路接合部に白蟻侵入防止処理を施す。その処理は、ゴム輪1a、1bに防蟻薬剤を0.1~0.4重量%添加したものを使用する。この防蟻薬剤の存在により白蟻の管2内への侵入を阻止して、ケーブルaの白蟻食害を防止する。



【特許請求の範囲】

【請求項 1】 土中に管路 2 を布設し、その管路 2 内にケーブル a を通した地中電線路において、前記管路 2 の接合部に白蟻侵入防止処理を施したことを特徴とする地中電線路における白蟻食害防止管継手。

【請求項 2】 上記白蟻侵入防止処理を、管路接合部における両管 2 の管端間に介在するゴム輪 1 a、1 b に防蟻用薬剤を添加したものを使用して行ったことを特徴とする請求項 1 に記載の地中電線路における白蟻食害防止管継手。

【請求項 3】 請求項 2 記載の地中電線路における白蟻食害防止管継手に使用する上記防蟻用薬剤を添加してなるゴム輪。

【発明の詳細な説明】**【0001】**

【発明の属する技術分野】この発明は、電力ケーブル、通信ケーブル等の地中電線路におけるそのケーブルの白蟻食害防止管継手及びそれに使用するゴム輪に関するものである。

【0002】

【従来の技術及びその課題】国際交易が盛んである今日、諸外国からの白蟻の侵入により、従来の我が国の白蟻では問題にならなかった地中電線路におけるケーブルの白蟻食害の問題が生じている。この食害を防止する手段として、まず、考えられたのが、管路をなす管又はケーブル外被を防蟻性とすることであり、それには、管又はケーブル外被に防蟻用薬剤を塗布したり、含浸したりするものである。

【0003】しかし、管及び外被への薬剤の塗布は大がかりとなつて、その作業が煩雑となる。また、薬剤の含浸は既設管及び既設ケーブルには採用し得ない。

【0004】この発明は、上記実情の下、作業が容易で、かつ既設管路にも採用し得る白蟻食害防止手段を提供することを課題とする。

【0005】

【課題を解決するための手段】上記課題を達成するために、この発明は、地中電線路における管路の接合部に白蟻侵入防止処理を施すこととしたのである。

【0006】既設の地中電線路において、その中のケーブルが白蟻食害を受けている場所を確認すると、管には食害による貫通孔（蟻道）は生じておらず、管接合部のゴム輪が食われて、そのゴム輪に蟻道が生じていた。このため、そのゴム輪の介在面、すなわち管の接合面への白蟻の侵入を防ぐべく、その接合部に白蟻侵入防止処理を施すこととしたのである。この処理は、管路の新設時は勿論、既設の管路においても採用し得る。

【0007】

【発明の実施の形態】この発明の一実施形態としては、土中に管路を布設し、その管路内にケーブルを通した地中電線路において、その管路接合部における両管の管端

間に介在するゴム輪に防蟻用薬剤を添加したものを使用することにより、上記白蟻侵入防止処理を施した構成とし得る。

【0008】上記管は、従来のヒューム管、鋼管、ガラス繊維強化プラスチック管などを採用し得るが、防蟻用薬剤を含浸させたものが好ましい。

【0009】上記防蟻用薬剤には、特公昭 59-17083 号公報、特公昭 59-40125 号公報、特開平 5-286816 号公報等に記載の既存の種々のものを採用し得る。

【0010】

【実施例】一実施例を図 1 及び図 2 に示し、この実施例は、一方の管 2 に管継手 P を嵌着した管接合部のゴム輪 1 a、1 b に防蟻用薬剤を添加して混練成形したものを採用したものである。すなわち、ケーブル a が挿通される管 2、2 の接合部において、スチレン-ブタジエンゴム（SBR）に防蟻薬剤（例えば、住友化学工業（株）商品名：エクスミン、通称ペルメトリン）を 0.2 重量%添加して成形したゴム輪 1 a、1 b を採用した。その成形時、エチレン-酢酸ビニル共重合体（EVA）の適宜量とエクスミンとのコンパウンドを作つて、そのコンパウンドを SBR に混合したものを使用し、EVA の SBR とエクスミンの両者との親和性でもつて、SBR 中にエクスミンを均等に分散させた。

【0011】このゴム輪 1 a、1 b は、図 2 に示すように、管 2 の受口側に装着し、他の管 2 の挿し口を矢印のごとく挿し込むことにより両管 2、2 を接続する。この接合部構造においては、イエシロアリの群の土中に入れても、管 2、2 中への白蟻の侵入は認められなかった。

【0012】上記防蟻薬剤の添加量としては、ゴム輪 1 a、1 b の機能を損なわない程度で適宜に選定すればよいが、0.1～0.4 重量%の添加量では、引張、硬さ、老化、永久ひずみの各試験において満足いけるものを得た。最適添加量は 0.2 重量%であった。

【0013】上記実施例は同種同径の管 2、2 の接合部に関してであるが、このような管継手 P の場合にも、例えば図 3 に示す、中央にゴム輪 1 b と一体のストッパ 3 を設けたもの等においても同様なゴム輪 1 a、1 b を使用すれば、防蟻を行うことができる。

【0014】また、異径管などの外径が異なる管 2、2 同士の場合、ポリコン FRP 管を鋼管・FRP 管などの異種の管と接続する場合、同一径でも断面寸法（外径）が異なり、この場合には、図 4（a）乃至（c）に示す管継手 P を使用するが、そのゴム輪 1 a、1 b にも同様な防蟻用を使用し得る。さらに、図 5 乃至図 7 に示す、管路途中における寸法調整用の中間継手 P、及び図 8 に示す可撓継手 P、図 9 に示す自在管継手 P でも同様である。これらの場合、ゴム輪 1 a、1 b を一体ものとすることもある（図 5 乃至図 6）。

【0015】

【発明の効果】この発明は、以上のように管接合部でもって白蟻の侵入を防止したので、新設のみならず、既設の地中電線路においても、ケーブルの白蟻食害を安価にかつ有効に防止できる。

【図面の簡単な説明】

【図1】一実施例の管接合部の断面図

【図2】同実施例の要部作用説明用断面図

【図3】他の実施例の管接合部の断面図

【図4】(a)、(b)、(c)は他の各実施例の断面図

【図5】(a)は他の実施例の管接合部の斜視図、(b)は同断面図

【図6】(a)は他の実施例の管接合部の斜視図、(b)は同断面図

【図7】(a)は他の実施例の管接合部の斜視図、(b)は同断面図

【図8】他の実施例の管接合部の断面図

【図9】他の実施例の管接合部の断面図

【符号の説明】

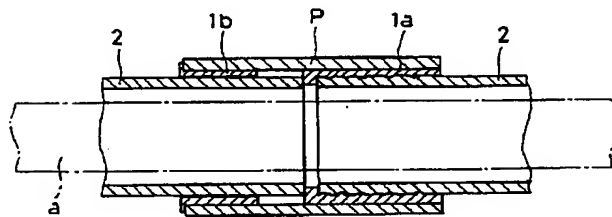
1 a、1 b ゴム輪

2 管

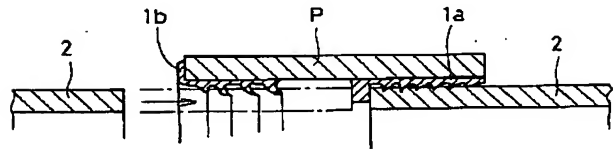
P 管継手

a ケーブル

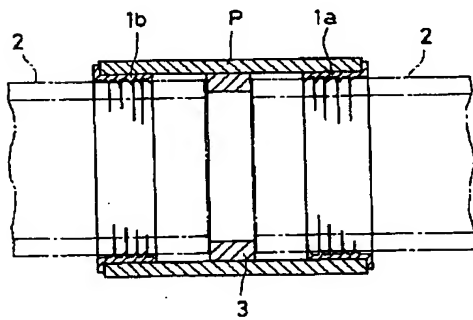
【図1】



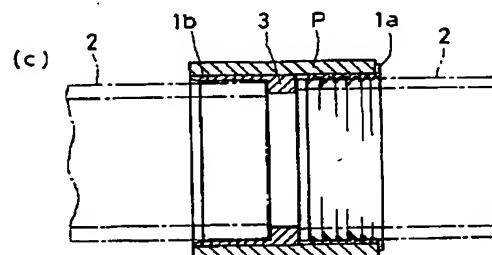
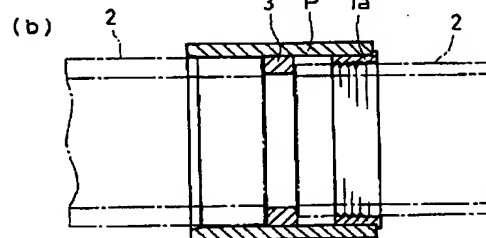
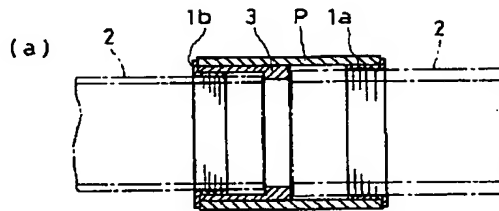
【図2】



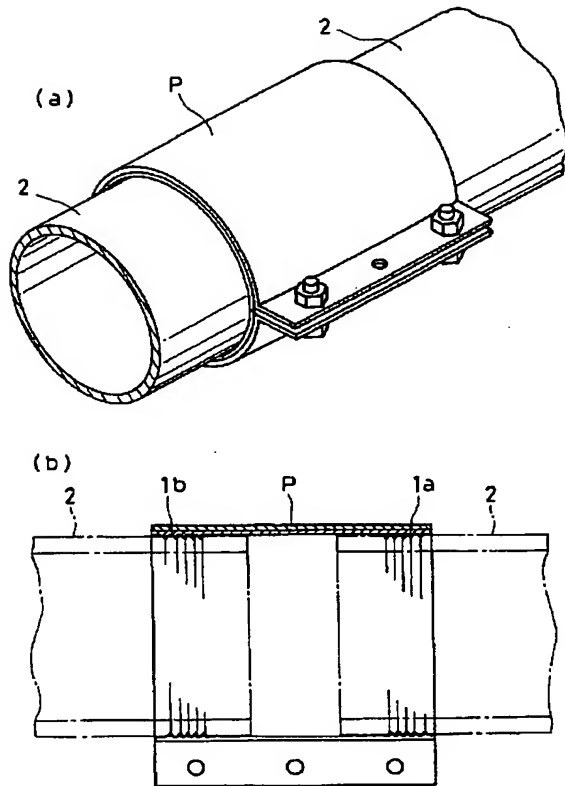
【図3】



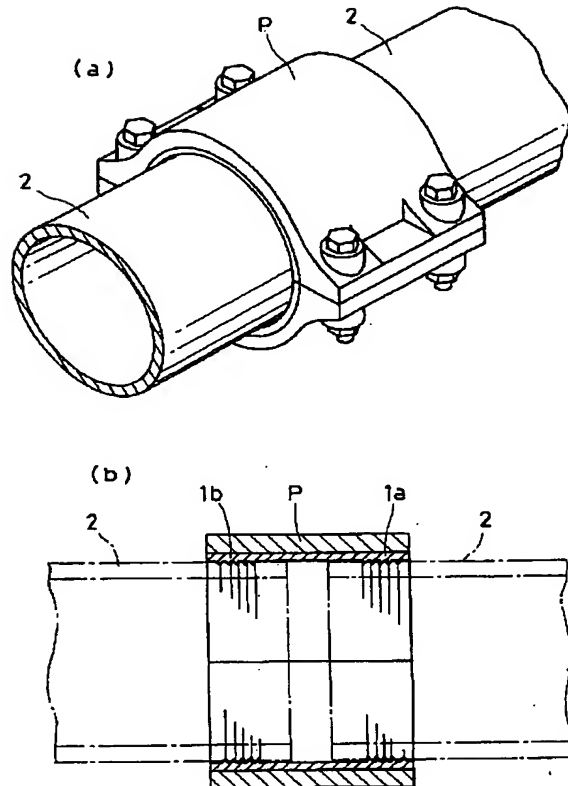
【図4】



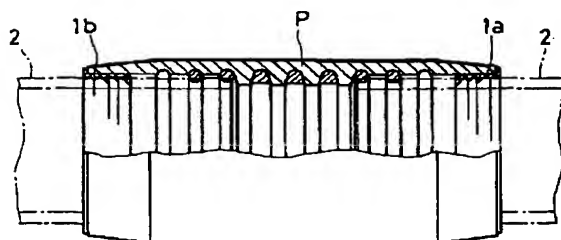
【図 5】



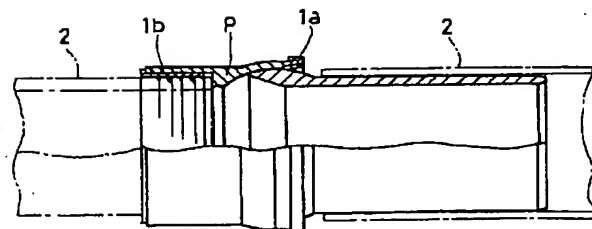
【図 6】



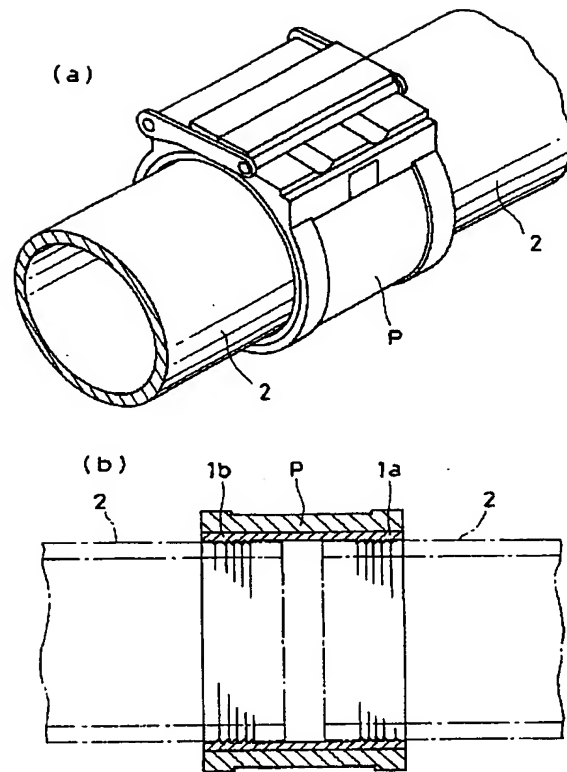
【図 8】



【図 9】



【図7】



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